

California Black Rail (*Laterallus jamaicensis coturniculus*)

Legal Status

State: Fully Protected; Threatened

Federal: Bureau of Land
Management Sensitive

Critical Habitat: N/A

Recovery Planning: N/A



Courtesy of Peter La Tourrette ©
California Academy of Sciences.

Notes: A recent molecular genetic analysis (Girard et al. 2010)

indicates that birds within and south of the Plan Area may qualify as a separate Distinct Population Segment (DPS) under the Endangered Species Act (ESA) (see Taxonomy section). No listing petition has ever been filed for this species (USFWS 2011), but this new information may result in reappraisal of the status of the species in the Lower Colorado River/Salton Trough region.

Taxonomy

The black rail (*Laterallus jamaicensis*) includes several subspecies which are largely disjunct in distribution. The two North American subspecies (the nominate *L. j. jamaicensis* and the California black rail [*L. j. coturniculus*]) are widely accepted, while two of the three South American subspecies, Junin rail (*L. j.* or *L. tuerosi*) and Galapagos rail (*L. j.* or *L. spilonotus*), are often regarded as separate species. Recent molecular analysis has revealed strong genetic divergence between coastal California, Central Valley, and Lower Colorado/Salton Trough populations (Girard et al. 2010). There is evidence for substantial gene flow between the coastal and Central Valley groups, but the Lower Colorado/Salton Trough group, "has a unique and highly divergent genetic composition" and may not have originated from the Coastal/Central Valley populations (Girard et al. 2010). Thus, it may constitute a separate subspecies and/or a "Distinct Population Segment" for the purposes of assessment and potential protection under the federal ESA.

Distribution

General

The California black rail occurs in California, Arizona, Baja California, and the Colorado River delta in Sonora. Figure SP-B05 shows the distribution of California black rail in the Plan Area. The subspecies appears to be composed of three clearly distinct populations. The coastal population is most numerous and inhabits tidal marshes mainly in the northern San Francisco Bay area, with smaller occurrences at sites from Bodega Bay to northwest Baja California. The intermediate-sized Central Valley population occurs at interior wetlands of Butte, Nevada, Placer, San Joaquin, and Yuba counties. The much smaller Lower Colorado/Salton Trough population primarily occurs at the following locations: (1) from Laguna Dam to Martinez Lake, Arizona; (2) around the Bill Williams River delta; (3) in the Colorado River delta area; and (4) in the Imperial Valley and adjacent Salton Sea (Eddleman et al. 1994; Patten et al. 2003, Hinojosa-Huerta, et al. 2004, Conway and Sulzman 2007, and Girard et al. 2010).

Distribution and Occurrences within the Plan Area

Historical

Grinnell and Miller (1944, pp. 130–131) were not aware of any occurrence of black rails in the Lower Colorado River/Salton Trough area, and the first report from the region was for an occurrence at Calipatria in the Imperial Valley (Laughlin 1947). It is thus possible that the rail was rare or absent from the Plan Area prior to construction of Colorado River dams, water diversions, and formation of the Salton Sea in 1905 (Patten et al. 2003). Extensive breeding season surveys were conducted in the area by Evens et al. (1991), at 906 stations in the Lower Colorado River and Salton Trough. They had 116 detections, with 65% of detections on the Lower Colorado River, 15% in seeps along the All American Canal, 12% at the Salton Sea, 7% at seeps along the Coachella Canal, and 1% at Finney Lake in the Imperial Valley. Overall, there are approximately 11 historical (i.e., pre-1990) California black rail occurrence records in the Plan Area (CDFW 2013; Dudek 2013). These occurrences are located in Imperial County, east of the Salton Sea (Figure SP-B05).

Recent

Extensive surveys in the southwestern U.S. in 2000 and 2001 largely confirmed the distribution found earlier, but found far fewer birds despite a greater survey effort, with populations at all sites stable or declining; most individuals were also in Arizona (Conway and Sulzman 2007). Currently, there are approximately 39 recent (i.e., since 1990) California black rail occurrences in the Plan Area. Recent occurrences of black rail in the Plan Area are primarily along the Lower Colorado River from the Laguna Diversion Dam upstream to about the head of Ferguson Lake (CDFW 2013; Figure SP-B05), although two more isolated occurrences extend the species' range along the river upstream to near Parker.

Other occurrences in the southeastern portion of the Plan Area include an isolated riparian marsh on the north side of the Salton Sea at the Dos Palmas Preserve Area of Critical Environmental Concern on Bureau of Land Management (BLM) lands, which is supported by seepage from the Coachella Canal; a marsh on the New River near Seeley; marshes at the mouth of the river where it enters the Salton Sea; and marshes supported by seepage from the All American Canal southeast of El Centro (Conway and Sulzman 2007).

In the northern portion of the Plan Area the species has been recorded at Little Lake (Inyo County 1964). In the southwestern portion of the Plan Area, the species was discovered as a suspected breeder at a Carrizo Marsh in Anza Borrego Desert State Park (San Diego County) in 1974 and 1976, but the marsh habitat was destroyed in September 1976 by tropical storm Kathleen and replaced by tamarisk (*Tamarix* spp.); there are no subsequent records for black rail in this area since 1976 (Unitt 2004). Single detections at Big Morongo Preserve in May 1983 and November 1984 suggest an attempt to establish there; the potential is substantial for small, undetected populations at other locations in the Plan Area (Campbell, pers. comm. 2012).

Natural History

Habitat Requirements

Suitable California black rail habitat generally includes salt marshes, freshwater marshes, and wet meadows. Most or all southwestern U.S. populations are nonmigratory, and these habitat types serve for breeding, foraging, and overwintering.

During the most recent comprehensive survey of California black rail occurrence in the southwestern U.S., Conway and Sulzman (2007) found all sites with black rail detections in riparian marsh habitat. At many sites, upland habitat (chiefly Mojave or Sonoran desert lowland vegetation) or open water were present within 50 meters (164 feet) of the detection site. Vegetation was compared between sites with and without black rails. Species positively correlated with black rails were common threesquare (*Schoenoplectus pungens*), arrowweed (*Pluchea sericea*), Fremont cottonwood (*Populus fremontii*), and seepwillow (*Baccharis salicifolia*). These plants, in turn, are strongly associated with shallow water or moist soil near the upland/wetland interface. Similar results were reported from prior surveys in the region, with Evens et al. (1991) reporting the species most frequent at occupied sites as common threesquare, cattails (*Typha angustifolia* and *T. domingensis*), California bulrush (*Scirpus californicus*), and native tree/shrub communities. Tamarisk presence was also positively associated with black rails but the species was infrequent where tamarisk cover was 67% or greater (Conway and Sulzman 2007). Conway and Sulzman (2007) concurred with previous authors in further concluding that black rail was positively associated with sites that have very shallow standing water (less than 3 centimeters (1.18 inches) deep) and very low daily water level fluctuations.

Foraging Requirements

California black rails forage in the same habitats they use for breeding. They prey on small (<1 centimeter [0.39 inch]) invertebrates, chiefly insects, gleaned from marsh vegetation and mudflats; they also eat small seeds (Eddleman et al. 1994). Analysis of seven incidentally taken rails from an Arizona site found that the birds' diet included various beetles, grasshoppers, ants, earwigs,

spiders, and other miscellaneous arthropods, as well as snails, bulrush, and cattail seeds. Bulrush and cattail seeds appear to be an important component of their diet during the winter months when insect prey availability is low (Flores and Eddleman 1991, as cited in Eddleman et al. 1994).

Reproduction

The black rail reproductive cycle begins with pair formation (Table 1). Associated behavior has not been observed but may involve calls by both sexes, which have been recorded from late February into July on sites along the Lower Colorado River (Eddleman et al. 1994). Multiple broods may be raised; nest records from Arizona indicate that the peak of egg-laying for the first brood of the season is May 1 (Eddleman et al. 1994). One study of black rail nesting along the Lower Colorado River determined that located nests had a mean clutch size of 4.8 eggs (Flores and Eddleman 1993). Nests were in clumps of vegetation elevated an average of 6.4 centimeters (2.52 inches) above the mud substrate. Incubation began at varying dates from March 30 to June 25, lasting from 17 to 20 days. Both sexes incubated the eggs. The birds aggressively defended the nests by scolding, raising their wings, and running toward researchers. Both young and parents abandoned the nest within 24 hours after the last egg in each clutch had hatched. Newborn hatchlings, although fairly precocious, are small and downy; it appears likely a period of parental care is needed, but there are no data on the subject (Eddleman et al. 1994). One female was recaptured 18 days after nest abandonment with an egg in her oviduct, suggesting that multiple brooding may occur (Flores and Eddleman 1993).

Table 1. Key Seasonal Periods for California Black Rail

	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding		X	X	X	X	X	X					

Source: Eddleman et al. 1994

Repking and Ohmart (1977) reported California black rail densities of 1.14 to 1.58 calling birds per hectare (0.46 to 0.64 calling birds per acre) in spring, and 0.73 birds per hectare (0.29 birds per acre) in winter, on the lower Colorado River. In Arizona, black rails used home ranges averaging 0.4 ± 0.2 hectare (0.98 ± 0.49 acre) and rarely overlapped (Flores 1991, as cited in Harvey et al. 1999).

Spatial Behavior

Movement of rails is primarily by running along the ground, often using trails made by voles (*Microtus* spp.). Rails can also swim short distances. Flight, which exposes them to aerial predators, is uncommon (Eddleman et al. 1994).

California black rails are believed to be nonmigratory, but their occurrence at many small locations indicates that dispersal movements occur (Eddleman et al. 1994). However, there is no documentation of the timing or manner of such movements.

Ecological Relationships

Black rail predators have not yet been identified in the Lower Colorado River/Salton Trough region. Elsewhere, documented avian predators include great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), northern harrier (*Circus cyaneus*), ring-billed gull (*Larus delawarensis*), great horned owl (*Bubo virginianus*), and short-eared owl (*Asio flammeus*) (Eddleman et al. 1994). Known mammalian predators include rats (*Rattus* spp.), red fox (*Vulpes vulpes*), and domestic cats (*Felis domesticus*). Nest predators likely include a variety of other mammals and reptiles as well (Eddleman et al. 1994).

Little is known about competition among black rails or between black rails and other species. Richmond et al. (2010), investigating competition between California black and Virginia rails in Northern California freshwater marshes, found a positive association between the two species; in the smallest marshes, Virginia rail presence was a good predictor of black rail presence.

Brood parasitism of black rails is not known to occur (Eddleman et al. 1994). It is likely that black rails, as most birds, are subject to infectious

disease and to parasitism by invertebrates such as mites and protozoans, but this has not been documented (Eddleman et al. 1994).

Mutualistic or commensal relationships do not appear to have been identified in black rails.

Population Status and Trends

Global: Declining (Birdlife International 2008)

State: Declining (Conway and Sulzman 2007)

Within Plan Area: No formal assessment, but results of Evens et al. (1991) and Conway and Sulzman (2007) strongly indicate populations are declining.

Comprehensive surveys of California black rail distribution and status were performed for the Lower Colorado River/Salton Trough region in 1973–1974 (Repking and Ohmart 1977), 1988–1989 (Evens et al. 1991), and in 2000–2001 (results included in Conway and Sulzman 2007). Repking and Ohmart (1977) found 106 birds in 1973 and 100 in 1974. Evens et al. (1991) found 75 birds in 1989. Conway and Sulzman (2007), in the most comprehensive survey effort of this region to date, report 136 birds in 2000–2001 surveys, including 100 along the Lower Colorado River, mostly in marshes between Laguna Dam north to Ferguson and Martinez Lakes, 21 black rails at three marshes along the All-American Canal. Of the 100 black rails detected along the Lower Colorado River, 38 were in the Plan Area in California (Conway et al. 2002, as cited in Corman and Wise-Gervaise 2005).

The 1991 study (Evens et al. 1991) reported that “subpopulations were small and isolated” and that “[t]he causes of this downward trend—all related to habitat loss or degradation—are pervasive and ongoing”. Conway and Sulzman (2007, p. 996) delivered a similar conclusion: “Our data suggest that degradation and elimination of suitable emergent marshes over the past 25 to 30 years has caused significant reduction in black rail distribution in Southern California and Arizona.”

Threats and Environmental Stressors

Human impacts on black rails include shooting and trapping, contaminants, collisions, effects of research, and habitat impairment. Shooting and trapping effects in modern times are likely very minor due to the small size of the bird (Eddleman et al. 1994). Contaminant effects, such as from exposure to pesticides, are virtually unknown, but slightly elevated selenium levels were found in Lower Colorado River birds and eggs analyzed in 1988 (Flores and Eddleman 1991, as cited in Eddleman et al. 1994). The habitat requirement for shallow wetlands makes California black rails especially vulnerable to manipulations of water levels in what are now heavily managed to entirely human-created environments. Research effects include potential disturbance of nesting birds during surveys, and more severe effects, such as mortality, nest failure, or exposure to predation, may occur in association with mist netting, radio tracking, or other invasive research techniques.

Specifically addressing the Lower Colorado River/Salton Trough populations, Conway and Sulzman (2007) identify degradation and loss of suitable emergent marsh habitat as the principal threat to the species. They also note declines in habitat suitability due to the spread of tamarisk.

Conservation and Management Activities

California black rail is not the subject of a documented recovery plan, and there do not appear to be any active state or local programs focused on its conservation and management. However, it is a covered species in several approved Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs). Several of these only affect the coastal and/or Central Valley populations and are not related to the Desert Renewable Energy Conservation Plan (DRECP) area. However, the rail is a covered species under both the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and the Lower Colorado River Multi-Species Conservation Program (LCRMSCP). Both the CVMSHCP and LCRMSCP include provisions to create or enhance black rail habitat within the proposed DRECP area. The CVMSHCP includes conservation and creation of black rail habitat at several sites in its plan area, as well as broader conservation

actions such as control of tamarisk and measures to ensure proper hydrologic function of conserved habitat (CVAG 2007, pp. 9-132 to 9-137). The LCPMSCP includes provisions to maintain existing black rail habitat and to create new habitat along the Lower Colorado River (LCRMSCP 2004, pp. 5-57 to 5-58).

Data Characterization

Although the black rail is very difficult to detect, its general habitat requirements are well understood, and it remains within a small home range in suitable habitat. Most currently occupied areas have benefitted from past alterations or creation, albeit without human intent to create habitat for the species. Accordingly, it is feasible to identify, conserve, or even create habitat that will be used by black rails. A key obstacle to black rail management is a complete absence of quantitative knowledge regarding dispersal movements. Past surveys (Evens et al. 1991; Conway and Sulzman 2007) have documented disappearance of black rails from apparently suitable habitat without recolonization. Population models applied to black rail sites in the Central Valley predict that the existing small, dispersed populations (or demes) are not large enough to be self-sustaining (Girard et al. 2010). However, these small populations have persisted, suggesting that birds are moving to and/or among these populations in a manner that is not yet understood. Resolving such population dynamics is a prerequisite to successful black rail recovery effort in California populations.

Management and Monitoring Considerations

Black rail management at existing preserves along the Lower Colorado River, such as the Bill Williams River National Wildlife Refuge and the Mittry Lake Wildlife Area (both in Arizona), as well as under approved HCPs such as the Coachella Valley MSCP and the Lower Colorado River MSCP, focuses on conserving and maintaining suitable habitat conditions by maintaining suitable hydrology and plant communities.

Any management actions potentially affecting California black rail habitat would likely require surveys to assess the potential for habitat occupancy. Survey protocols appropriate for habitat in the Lower

Colorado River/Salton Trough area have been developed and are described by Conway (2005) with additional information available at the North American Marsh Bird Monitoring Program website (<http://www.cals.arizona.edu/research/azfwru/NationalMarshBird>); this protocol is currently used for the Lower Colorado River MSCP.

Species Modeled Habitat Distribution

This section provides the results of habitat modeling for California black rail, using available spatial information and occurrence information, as appropriate. For this reason, the term “modeled suitable habitat” is used in this section to distinguish modeled habitat from the habitat information provided in Habitat Requirements, which may include additional habitat and/or microhabitat factors that are important for species occupation, but for which information is not available for habitat modeling.

There are 220,888 acres of modeled suitable habitat for California black rail in the Plan Area. Appendix C includes a figure showing the modeled suitable habitat in the Plan Area.

Literature Cited

- Birdlife International. 2008. “*Laterallus jamaicensis* (Black Rail).” The International Union for Conservation of Nature (IUCN) Red List of Threatened Species.. Accessed April 26, 2011.
<http://www.iucnredlist.org/apps/redlist/details/143827/0>.
- Campbell, K.F. 2012. Personal communication (email and profile review comments) from K.F. Campbell to M. Unyi (ICF). May 16, 2012.
- CDFW (California Department of Fish and Wildlife). 2013. “*Laterallus jamaicensis coturniculus*.” Element Occurrence Query. California Natural Diversity Database (CNDDB). RareFind, Version 4.0 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Accessed September 2013.
<http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.

- Conway, C.J. 2005. *Standardized North American Marsh Bird Monitoring Protocols*. Wildlife Research Report #2005-04. Tucson, Arizona: U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit.
- Conway, C.J., and C. Sulzman. 2007. "Status and Habitat Use of the California Black Rail in the Southwestern USA." *Wetlands* 27(4):987–998.
- CVAG (Coachella Valley Association of Governments). 2007. Final Recirculated *Coachella Valley MSHCP. Section 9.0, Species Accounts and Conservation Measures*. September 2007. Accessed April 29, 2011. http://www.cvmshcp.org/Plan_Documents.htm.
- Dudek. 2013. "Species Occurrences—*Aquila chysaetos*." DRECP Species Occurrence Database. Updated September 2013.
- Eddleman, W.R., R.E. Flores, and M. Legare. 1994. "Black Rail (*Laterallus jamaicensis*)," *The Birds of North America Online*. Edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Accessed April 29, 2011. <http://bna.birds.cornell.edu/bna/species/123>.
- Evens, J.G., G.W. Page, S.A. Laymon, and R.W. Stallcup. 1991. "Distribution, Relative Abundance, and Status of the California Black Rail in Western North America." *The Condor* 93:952–966.
- Flores, R.E. and W.R. Eddleman. 1993. "Nesting Biology of the California Black Rail in Southwestern Arizona." *Western Birds* 24:81–88.
- Floyd, T., C. S. Elphick, G. Chisholm, K. Mack, R. G. Elston, E. M. Ammon, and J. D. Boone. 2007. *Atlas of the Breeding Birds of Nevada*. Reno, NV: University of Nevada Press.
- Girard, P., J.Y. Takekawa, and S.R. Beissinger. 2010. "Uncloaking a Cryptic, Threatened Rail with Molecular Markers: Origins, Connectivity, and Demography of a Recently Discovered Population." *Conservation Genetics* 11:2409–2418.

- Grinnell, J., and A.H. Miller. 1944. *The Distribution of the Birds of California*. Pacific Coast Avifauna Number 27. Berkeley, California: Cooper Ornithological Club.
- Harvey, T., S. Bailey, G. Ahlborn, and California Wildlife Habitat Relationships (CWHR) Program Staff. 1999. "Life History Account for the Black Rail." Last revised 1999. Accessed April 28, 2011. <https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=17533>.
- Hinojosa-Huerta, O., H. Iturribarría-Rojas, Y. Carrillo-Guerrero, M. de la Garza-Treviño, and E. Zamora-Hernández. 2004. Bird Conservation Plan for the Colorado River Delta. Pronatura Noroeste, Dirección de Conservación Sonora. San Luis Río Colorado, Sonora, México.
- LCRMSCP (Lower Colorado River Multi-Species Conservation Program). 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Final Habitat Conservation Plan. Prepared by Jones & Stokes (J&S 00450.00). Sacramento, California. December 17, 2004.
- Patten, M.A., R.G. McCaskie, and P. Unitt. 2003. *Birds of the Salton Sea*. Berkeley, CA: University of California Press.
- Repking, C.F., and R.D. Ohmart. 1977. "Distribution and Density of Black Rail Populations along the Lower Colorado River." *The Condor* 79:486–489.
- Richmond, O.M., J. Tecklin, and S.R. Beissinger. 2008. "Distribution of California Black Rails in the Sierra Nevada Foothills." *Journal of Field Ornithology* 79(4):381–390.
- Richmond, O.M.W., J.E. Hines, and S.R. Beissinger. 2010. "Two-Species Occupancy Models: A New Parameterization Applied to Co-Occurrence of Secretive Rails." *Ecological Applications* 20(7):2036–2046.
- Unitt, P. 2004. *San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History*, Ibis Publishing Company, 645 pp.

BIRDS

California Black Rail (*Laterallus jamaicensis coturniculus*)

USBR (U.S. Bureau of Reclamation). 2001. *Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Proposed Coachella Canal Lining Project, Imperial and Riverside Counties, California. Section 3.0, Affected Environment and Environmental Consequences*. Yuma, Arizona: U.S. Bureau of Reclamation.

USFWS (U.S. Fish and Wildlife Service). 2011. "Species Profile for California Black Rail (*Laterallus jamaicensis coturniculus*).” Last revised April 26, 2011. Accessed April 26, 2011.
<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0EE>.

BIRDS

California Black Rail (*Laterallus jamaicensis coturniculus*)

INTENTIONALLY LEFT BLANK

